**City of Seattle**
**Request for Information**
**Public-Private Partnership for the Purpose of Providing State-of-the-Art Wireless Mission-Critical Voice and Broadband Data Capabilities for Public Safety and General Government**

## Introduction

City of Seattle, on behalf of the Radio Executive Policy Committee (REPC), is requesting information about possible public-private partnerships for the purpose of provisioning state-of-the-art wireless mission-critical voice and broadband data capabilities for public safety and general government use throughout Snohomish County, King County and Pierce County, Washington (collectively "the Region"). Because information collected through this Request for Information (RFI) could apply to local governments nationwide, this RFI effort is endorsed by the Chief Technology Officer in the Office of Science and Technology Policy in the White House.

The Region is bordered on the west by Puget Sound and on the east by the Cascade Mountains. All three counties have significant urban and suburban areas, but also farming and recreational/forest preserve areas.

The following chart summarizes basic information about the Region:

| **County** | **Area (sq mi)** | **Population** | **Website with additional information** |
|---|---|---|---|
| Snohomish | 2,089 | 696,600 | http://www1.co.snohomish.wa.us/County_Information/ |
| King | 2,134 | 1,884,200 | http://www.kingcounty.gov/ |
| Pierce | 1,790 | 805,400 | http://www.co.pierce.wa.us/PC/ |
| **Totals** | **6,013** | **3,386,200** | |

The REPC was formed in 2008 for the following purpose:

> The goal of the Committee is to design, build, and operate a single voice network and a single data network or set of integrated networks that meet local and regional needs including those for capacity, coverage, and functionality, and to migrate from the Region's current public safety communications networks to the improved networks.

**Problem Statement**

a. Land Mobile Radio (LMR). Most of the public safety agencies, and many related agencies (utilities, public works) in the Region are served by older-version Motorola SmartZone LMR systems. The vendor is withdrawing its support for these versions over a period of years necessitating us to upgrade or replace those systems. Any such upgrade or replacement will take several years and be very expensive. In addition, some of the current LMR systems were constructed over 15 years ago and now need coverage improvements to accommodate population growth that has occurred over that time; therefore, we must decide how to proceed soon or risk significant system degradation as vendor support for our mission critical voice networks ends. Some existing sites are also at capacity; therefore, we need new "green field" sites that are not easily available to the regional governmental agencies.

b. Broadband wireless data. System users value data services in accomplishing their jobs; however, there is no strategy or standard for wireless data communication within the Region. A few public safety agencies within one county use a private 9.6 kbps data network for computer-aided dispatch. Elsewhere, individual agencies and jurisdictions typically negotiate service agreements with commercial carriers for wireless data services. Existing services often do not provide the performance, priority, security, and reliability that public safety requires.

   The need to upgrade or rebuild our systems affords an opportunity for this Region to improve data operability and interoperability. Building our own broadband wireless data system will require us to obtain and build a significant number of sites that are not now available to the regional governmental agencies.

   Seattle has obtained, and the Region has applied for, waiver of FCC rules to use 700 MHz spectrum for such a network. Our business analysis has shown that the traditional build, own, operate, and maintain model is cost-prohibitive if only first responders are allowed to use this network. Even if the FCC would allow broader use of this network, we are uncertain whether we could afford to build and operate a standalone LTE network.

c. Single system. It is highly desirable to local government to have a single wireless system that can satisfy the requirements for both mission-critical voice and broadband data. The Region is trying to determine whether or not we really need to fund another round of separate LMR systems.

d. Capital funding. Traditionally, government has provided capital funding for replacement of LMR systems and used operating budget to pay for wireless data services. The Region is seeking alternatives to the traditional capital funding model for the provision of mission-critical voice and data services.

e. Rapid technological advances. The traditional capital funding model works fine for infrastructure that has a long useful life; however, wireless infrastructure is advancing quickly and the Region does not want to be stranded with obsolete systems that it cannot afford to upgrade or replace. Therefore, we are interested in exploring partnership models that could shift risks associated with rapid technological change to others.

f. Operational funding. In these difficult economic times, local government is poorly positioned to significantly increase its yearly operations costs absent significant corresponding cost reductions elsewhere. The Region's governments will be cautious about staffing the operations of separate voice and data networks unless we can save money on other operations or shift payments currently going to other payments.

g. VHF Narrowbanding. Some local agencies that have VHF radio systems must comply with the Federal Communications Commission (FCC) Narrowbanding mandate. This has created an opportunity to consolidate disparate VHF radios systems into other regional systems.

h. We anticipate that Next Generation 911 (NG911) will be implemented nationwide soon. The existing E911 system in the Region is primarily voice-based and not able to support NG911.

i. The problems stated above are not unique to City of Seattle or the Region. They are faced by local governments nationwide. The solution(s) provided in this RFI may very well apply to other regions throughout the country. Therefore, this RFI effort is endorsed by the Chief Technology Officer in the Office of Science and Technology Policy in the White House. Other jurisdictions that received waivers authorizing use 700 MHz broadband spectrum and that are interested in receiving our analysis of the responses to this RFI include:

    - Calumet, Outagamie, and Winnebago Counties, WI
    - City of Boston, MA
    - City of Charlotte, NC
    - City of Chesapeake, VA
    - City of Honolulu, HI
    - City of Pembroke Pines, FL
    - San Francisco BayRICS Joint Powers Authority

- State of Arizona
- State of Iowa
- State of Oregon

j. The nationwide wireless public safety broadband data network will require a top-level architecture, and a new system in the Region will have to fit within that architecture. The national architecture has not yet been fully defined. Also, we do not have the expertise necessary to ensure that the Region's system complies with the nationwide architecture.

**Purpose of this RFI**

The purpose of this Request for Information (RFI) is to obtain information from interested parties to help us resolve the problems stated above. In particular, we are issuing this RFI to help us determine which courses of action, including public-private partnerships, are both preferable and feasible and which are not. Therefore, we are seeking responses to this RFI as a means of indicating the technology, business models, operational structures, and other key matters which private partners, including the Respondent, would potentially be willing and able to provide us assuming other conditions were met.

Through this RFI, City of Seattle and the REPC present to carriers, vendors, and others the opportunity to showcase their solutions, both current and under development, and to share information to assist us in making our upgrade/replacement decisions. We anticipate that City of Seattle and the REPC will use the responses to this RFI as a basis for further discussions about how best to address the stated problems.

**Scope**

The scope of this RFI is wireless mission-critical voice and broadband data for public safety, general government, and public utility use throughout Snohomish County, King County and Pierce County, Washington.

**Current State**

a. Existing Land Mobile Radio (LMR) Systems

There are eight primary public safety LMR systems providing mission-critical voice services in the Region. They are:

- Snohomish County Emergency Radio System (800 MHz);
- King County Emergency Radio Communication System (800 MHz);
- Port of Seattle Public Safety Radio System (800 MHz);

- Tacoma-Puyallup Public Safety Radio System (800 MHz);
- Pierce County Government Radio Communications System (VHF);
- Pierce County FireCom Radio System (VHF);
- Pierce County Transit Radio System (700 MHz); and
- Washington State Patrol Radio System (VHF).

There are approximately 30,000 mobile and portable radios on these LMR systems.

Most of these radio systems are interconnected via gateways and patches to allow end users to communicate with one another across systems. The subscriber radios on these systems are also cross programmed with interoperability channels from each system to allow end users to communicate with one another across systems.

Additional details about these systems can be found in Appendix A.

b. Existing Wireless Data Services

There are approximately 10,000 commercial wireless data cards in use by public safety and general government throughout the Region. In addition, some public safety agencies in Snohomish County use a shared, private data network that offers maximum speed of 9.6 kbps.

**Desired Future State**

a. Wireless mission-critical voice. The Region needs a system that provides wireless mission-critical voice communication for public safety and general government agencies and that satisfies the Region's requirements for

- Coverage;
- Reliability;
- Capacity;
- Public safety and incident-driven priority;
- Seamless roaming throughout the three-county geographic area; and
- Scalability to meet the Region's requirements through at least 2030.

Details and other requirement are listed in Appendix B.

b. Wireless broadband data. The Region needs a single system to provide wireless broadband data service for public safety, public utilities, public transportation, and general government. It must satisfy the following requirements:

   - Comply with requirements set forth in the FCC waiver order authorizing use of the 700 MHz public safety broadband spectrum[1] and subsequent FCC rulings clarifying requirements for the national wireless public safety broadband data network, including the interoperability showing;
   - Integrate into the national wireless public safety broadband data network architecture, including network identifiers , interagency connections, and roaming to commercial LTE and older-technology wireless broadband data networks;
   - Coverage;
   - Reliability;
   - Capacity;
   - Public safety and incident-driven priority;
   - Seamless roaming throughout the three-county geographic area; and
   - Scalability to meet the Region's requirements through at least 2030.

   Details and other requirement are listed in Appendix B.

c. Single system/single end user device. If feasible, it is highly desirable that end users be able to carry a single device for wireless mission-critical voice and broadband data. The wireless system must natively support mission-critical voice capabilities. (Note: This capability is distinguished from Voice-over-LTE (VoLTE), which refers to carrying cellular voice calls and other non-mission-critical voice traffic over an LTE system. It is also distinguished from the use of gateway equipment or other proprietary devices to bridge between LMR critical voice systems and VoLTE services.)

**Public Assets that the Region Could Bring to the Partnership**

a. Spectrum

[1] See *Requests for Waiver of Various Petitioners to Allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks, PS Docket 06-229, Order, 25 FCC Rcd 5145 (2010) (Waiver Order)*

- 700 MHz Broadband Spectrum (City of Seattle received a conditional waiver from the FCC in May 2010 that authorizes operation within the geographic area of the city. A regional waiver request is pending.)
- 700 MHz and 800 MHz narrowband spectrum (available upon request)

b. Existing radio sites (list of sites available upon request)

c. Public buildings in Seattle and other areas in the Region (list available upon request)

d. Fiber (fiber route map available upon request)

e. Microwave backhaul (details available upon request)

f. Some capital and operating funds may be available

g. Current Land Mobile Radio system assets such as P25 switches, subscriber units (handheld and mobile radios), site controllers and antennas, simulcast systems, consoles, etc. (details available upon request)

h. Additional public safety, utility, transportation, transit, public works and general government subscribers using voice and data networks other than those presently using the networks listed above. Note: A number of government-owned electric utilities are active in the Region, e.g. Tacoma Public Utilities, Seattle City Light, Snohomish County PUD, etc.

i. Additional users for the network, e.g. SmartGrid (Seattle City Light has 400,000 meters which could potentially be wirelessly enabled), SCADA systems used by electric, gas, and water utilities, etc.

j. Skilled technical staff which support the present networks, including LMR staff, installers and telecommunications technicians, data networking staff etc.

k. Other assets could be identified. Suggestions from Respondents to this RFI about such assets are welcome.

**Private Assets that the Respondent Could Potentially Bring to the Partnership**

a. Capital funding

b. System ownership

c. System maintenance

d. System operations

e. Network management systems which allow local Regional technical staff to control and manage certain features of the proposed networks, e.g. provisioning of subscriber units, priority of applications, subscribers and groups, etc.

f. Roaming partnerships or agreements between national public safety .systems and commercial LTE systems

g. National transport (backhaul) networks

h. Additional spectrum in the 700 MHz, 800 MHz, or other bands which could be used.

i. Willingness to share sites (building space, tower space, power, etc.) for .government equipment

j. Willingness to share capacity on local transport (backhaul), i.e. fiber or microwave

k. Shared use of system equipment (i.e. EPC, eNodeB)

l. Ability to market the network to other authorized users such as public utility districts, transit agencies, privately owned utilities, ambulance or medical services etc.

m. Other assets (suggestions welcome)

**Questions for Interested Respondents**

Note: Respondent may answer all or part of the following questions (for example, only the mission-critical voice questions and not the broadband data questions) and may provide multiple solutions, if desired. The Respondent may also partner with other organization(s) to jointly-submit a response. Please feel free to forward this RFI to other parties who may be interested in receiving it.

a. When will your company be able to provide standards-based, mission-critical voice services (such as those currently provided by LMR systems) on an LTE infrastructure? Cellular-type VoLTE services or the use of gateway equipment or proprietary devices to link LMR and LTE systems is not considered to be standards-based mission-critical voice on LTE infrastructure.

b. Please provide detail about your suggested public-private partnership opportunity that includes the following details. (Please note that ownership of the system is less important to government than having the ability of to

administer the system to support the user agency operation, especially during emergencies. For example, agencies need to be able to provision users, remove users, and modify user priority and privileges in response to specific incidents.)

- Technical architecture: Please provide recommended top-level system diagram(s), including block diagrams, spectrum used, and descriptions.
- Would this solution fully or partially meet our future state requirements (Appendix B), and when? Please be specific.
- If you are unable to meet any of the requirements listed in Appendix B, or if any requirements in Appendix B are unreasonable, please explain in detail.
- Ownership and business model: Please describe who would own which components of the system(s). Describe in detail the roles that government would play, that the Respondent would play, or that government and the Respondent would jointly play. Also describe who would make what decisions about system management and control.
- Operational model: Please describe who would operate which parts of the system(s). Also describe who would make what decisions in what level of operations management and control.
- Sharing model: Please describe any recommended sharing model including scope (i.e. sites, backhaul, spectrum, and system equipment), access, responsibilities, and liabilities of the sharing arrangement.
- Roaming model: Please describe any recommended roaming model (nationally and locally).
- Maintenance model: Please describe who would maintain which parts of the system(s).
- Transition plan: Please provide a transition plan from current state to recommended future state. Include a timeline for the transition and a description of the impact on system users during the transition period.
- Please provide a detailed implementation plan with schedule starting from the date of contract signature.
- Please provide capital costs and ongoing costs (e.g. line charge per subscriber). Please use the Excel spreadsheet in Appendix C to present the cost figures. For ongoing costs, what are the length of the term and other requirements?

- Please list and describe the assumptions made in your recommendation.
- Please describe issues that still need to be addressed.
- Are there any additional parties needed for the recommended partnership? If so, please describe.
- Does you recommended solution require any modification to current regulations (for example, FCC regulations)?
- Would the public-private partnership model you recommend be available in this Region only, only if done nationally, or both regionally and nationally?
- Why do you believe that your recommended public-private partnership is the best for the Region and/or the nation?
- Please describe the status of development of public safety (Band Class 14) end user devices. Please describe how this equipment can roam into commercial networks and maintain communication with end users on the public safety wireless network.
- How would you suggest that public safety get to a national architecture? What is your company willing to do to help public safety achieve that?

In answering the questions above, here are some general ideas:

Public-private partnerships can take many forms ranging from the private sector vendor simply supplying system equipment to the vendor designing, construction, owning, operating, and maintaining the system with the government being just another customer. We are interested in learning which such models would be desirable to you and what role you envision for us in that model. Please be aware that the Region does not prefer any particular model.

Please indicate what public-private partnership model(s) you would consider. Which tasks in designing, constructing, owning, operating, and maintaining a state-of-the-art wireless critical voice and broadband data network for public safety, general government, and public utilities would you be willing to do jointly and under what conditions, and which not?

Please be as specific as possible in providing this information. For example, if you are willing to provide us with space on your towers and in your sites, please indicate, for example, how much backup power you intend to have at those sites and whether you envision giving us the choice to share that power.

If you are proposing multiple models and if you prefer one of these models or think that one is most advantageous to government, please indicate this and explain your rationale for this judgment.

**Response Process**

Responses to this RFI must be received no later than 3:00 p.m., Seattle time, on Friday, February 10, 2012, at this location:

700 5th Avenue, Suite 2700
PO Box 94709
Seattle, WA 98124
Attention: Stan Wu

Respondents may mail or hand-deliver their written responses. Please provide one printed copy of your response suitable for duplication and one electronic copy on CD that can be copied in Microsoft Word ™ or .PDF ™ format.

**Response Format**

Please use the following format in organizing your response:

1. Cover Page. The cover page should:
    a. Include the name of the organization(s) submitting the response;
    b. Describe your organization's qualifications to support the proposed approach. At a minimum, provide annual sales, number of employees (locally and nationally), and your organization's experience in the industry and with similar partnerships;
    c. Include the name, title, telephone number, and email address for the person authorized by the organization to clarify or expand upon information in the response; and
    d. Be signed by authorized official(s) of your organization.
2. Table of Contents
3. Executive Summary
4. Responses to Questions
5. Financial Information (see Appendix C)
6. Other, additional information that may be helpful to understanding the proposed public-private partnership model(s).

## Vendor Conference

City of Seattle will host a conference for interested vendors in early January 2012 (date and location TBD) in conjunction with the Chief Technology Officer in the Office of Science and Technology Policy in the White House. As soon as details are confirmed, City of Seattle will send notification about the vendor conference by e-mail to all parties that received the RFI directly from the City. The City will also post a notice at http://www.seattle.gov/doit/vendor.htm.

## Process to Answer Questions from Respondents

Vendors interested in responding to this RFI may submit questions or requests for clarifications. All questions or requests must be submitted by e-mail to rfi_ppp@seattle.gov and received no later than 3:00 p.m., Seattle time on Friday, February 3, 2012. The City reserves the right to contact vendors for clarification of RFI content throughout the informational gathering process.

Answers to questions (without identifying the originator of those questions) and amendments to this RFI will be posted at http://www.seattle.gov/doit/vendor.htm. Answers and amendments will also be distributed by e-mail to parties that received the RFI directly from City of Seattle.

## Interested Vendor E-mail Distribution List

Interested respondents that did not receive the RFI directly and that would like to receive answers, amendments, and notifications regarding the vendor conference can ask to be added to the e-mail distribution list by sending contact information to rfi_ppp@seattle.gov.

## Response Disposition

Issuance of the RFI in no way constitutes a commitment to award any contract(s). This RFI is designed to provide vendors with information necessary for the preparation of informative responses and possible solutions which the City of Seattle and the REPC may use in helping craft an RFP for the System.

This RFI process is for City of Seattle and the REPC's benefit and is intended to assist in the development of a strategy and options that are determined to provide the REPC and its members with the best and most cost efficient solution to the wireless communications needs of the local governments in the Region. The RFI is not intended to be comprehensive and each respondent is responsible for determining the factors necessary for submission of a comprehensive response.

By submitting a response the Respondent agrees that the REPC and its member agencies may copy and distribute the response, in whole or in part, for the purpose

of facilitating the review of the response. The vendor consents to such copying by submitting a response and warrants that such copying does not violate the rights of any third party. By submitting one or more responses, the respondent thereby grants the REPC and its member agencies the right to use the ideas and to adapt or modify the Respondent's ideas, which are contained in the response.

**Confidential information and public disclosure**

Any information deemed by the Respondent to be confidential should be separately bound and clearly marked.

Proposers should be aware that any record (including but not limited to the Proposer's proposal) they submit to the City shall become a public record. See RCW 42.56 at www.leg.wa.gov. The City is required by law to make public records promptly available for public inspection and disclosure except for certain exemptions as provided by State law.

**Post RFI follow-up**

After receiving responses to this RFI, the City of Seattle and REPC may call the Respondent to clarify information provided in its response or ask the Respondent to make a formal presentation to City of Seattle and REPC. The purpose of this RFI is to obtain information, and City of Seattle and REPC will not necessarily respond to every party that submits a response.

# Appendix A: Current State

## A.1 Land Mobile Radios (LMR) systems in the Region

There are eight primary public safety LMR systems operating in the Region. They are:

- Snohomish County Emergency Radio System;
- King County Emergency Radio Communication System;
- Port of Seattle Public Safety Radio System;
- Tacoma-Puyallup Public Safety Radio System;
- Pierce County Government Radio Communications System;
- Pierce County FireCom Radio System;
- Pierce Transit Radio System; and
- Washington State Patrol Radio System.

Most of these radio systems are interconnected via gateways and patches to allow end users to communicate with one another across systems. The subscriber radios on these systems are also cross programmed with interoperability channels from each system to allow end users to communicate with one another across systems.

There are also separate transit, government, and business radio systems in the Region. Transit agencies and businesses (such as Boeing and Puget Sound Energy) as well as other government agencies can be essential participants in responding to emergencies; however, planning for their radio systems is beyond the scope of this Request for Information. Table A-1 below provides a comparison of key attributes of these systems.

Additional information about each LMR system is available below the table.

## TABLE A-1

## Summary of Current Public Safety Land Mobile Radio Systems in the Region

| Radio System | SERS | King County | | | | Port of Seattle | Tacoma-Puyallup | Pierce County Government | Pierce County Transit | WSP (within the Region) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | City of Seattle | EPSCA | King County | ValleyCom | | | | | |
| Type of system | 800 MHz SmartZone 4.1 trunked | 800 MHz SmartZone 4.1 trunked | | | | 800 MHz SmartZone 4.1 trunked | 800 MHz SmartZone 4.1 trunked | VHF conventional | 700 MHz P25 Phase 1 | VHF conventional |
| Year completed | 2003-2006 | 1993-1997 | | | | 1993 | 2004-2008 | 1999 | 2007 | 2001 (major upgrade to base stations and repeaters) |
| Significant recent changes | Switch upgrade in 2012 | Switch upgraded to Astro 25 version 7.8 in 2010. | | | | Upgraded to SmartZone 4.1 in 2004 | Added Puyallup in 2008. Expansions 2009-2010. Switch upgrade in 2012 | Must Narrowband before 1/1/2013 | Switch upgraded to Astro 25 version 7.7 in 2011 | Must Narrowband before 1/1/2013 |
| Number of mobiles and portables | 4,300 | 5,000 | 2,700 | 5,000 | 3,500 | 2,000 | 3,600 | 2,200 | 668 | 350 |
| % of radios that are P-25 Phase 1 capable[2] | 30% | 95% | 0% | 0% | 0% | 60% | 95% | 0% | 98% | 0% |
| % of radios that are P-25 Phase 2 capable[1] | 0% | 0% | 0% | 0% | 0% | Less than 1% | Less than 1% | 0% | 2% | 75%[3] |

[2] The radios are P25-capable; however, many would require software upgrades to enable P25 operation.
[3] These are multi-band radios capable of operating on VHF radio systems and 700/800 MHz radio systems.

| Radio System | SERS | King County | | | | Port of Seattle | Tacoma-Puyallup | Pierce County Government | Pierce County Transit | WSP (within the Region) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | City of Seattle | EPSCA | King County | ValleyCom | | | | | |
| Number of radio sites | 21 | 6 | 7 | 10 | 3 | 5 | 12 | 11 | 6 | 11 |
| Number of dispatch centers | 2 | 2 | 3 | 3 | 1 | 1 | 7 | 1 | 1 | 3 |
| Number of dispatch positions | 37 | 40 | 20 | 28 | 20 | 23 | 61 | 15 | 10 | 15 |

Snohomish County Emergency Radio System (SERS)

The Snohomish County Emergency Radio System (SERS) is a Motorola SmartZone 800 MHz trunked radio system that provides coverage throughout Snohomish County. At the time that the SERS system was built, there were very few radio frequencies ("channels") available within Snohomish County. As a result, the system was designed exclusively for use by police, fire, and emergency medical services ("public safety"). It does not support general government users.

The system supports approximately 4,300 mobile and portable radios and 37 dispatch consoles.

SERS is a non-profit government corporation that was created by an Interlocal agreement between ten founding members: Snohomish County and nine cities within the county. SERS is governed by a ten-member board composed of elected officials or their designees that represent the founding members.

The SERS radio system was funded and built in two phases. Phase I was completed in 2003 at a cost of $21.4M, and was funded by the founding members based upon a cost-sharing formula that considers population, geographic area, and call volumes. Phase II was completed in 2006 at a cost of $10.7M and was funded solely by Snohomish County. Ongoing costs are funded by the founding members using the same cost-sharing formula used for Phase I construction.

King County Radio Emergency Communication System

The King County Emergency Radio Communication System is a Motorola SmartZone 800 MHz trunked radio system which provides coverage throughout King County by serving all major urban and community areas. It is used by public safety and general government and supports approximately 16,200 mobile and portable radios and 108 dispatch consoles.

The King County radio system consists of four sub-regions: City of Seattle, the Eastside Public Safety Communications Agency (EPSCA), King County, and Valley Communications Center (ValleyCom). Each sub-region operates and maintains radio system infrastructure (e.g. radio transmitter sites) within its designated geographic area. The central switch equipment that connects the four sub-regions into one integrated, countywide radio system is owned equally (25% shares) by the four sub-regional owners and is operated by the King County Regional Communications Board (KCRCB). The KCRCB was created by an Interlocal agreement and is composed of five members: one representative from each owner agency and one at-large member to represent non-owner interests.

The existing King County radio system was funded by a property tax levy approved by King County voters in 1992. The county collected $0.016 per $1,000 of

assessed property value during 1993-1995 for a total of more than $57M by the end of the three-year period. Construction of the current 800 MHz radio system began in 1993 and was substantially complete in 1997.

Ongoing system costs are funded by the four system owners – either directly, in the case of radio system infrastructure located within their geographic operating areas, or indirectly through the KCRCB, as is the case for the common switch equipment.

Port of Seattle Radio System

The Port of Seattle radio system is a Motorola SmartZone 800 MHz trunked radio system that serves SeaTac airport, the seaport, and surrounding areas. It supports approximately 2,000 mobile and portable radios used by Port of Seattle Police, Port of Seattle Fire, emergency management, aviation operations and security, seaport security, and others. There are 23 dispatch consoles.

The current system was originally installed as a Motorola SmartNet system in 1993, and was upgraded to Motorola SmartZone in 2004. The Port of Seattle's Aviation Division manages the radio system and funds ongoing operation and maintenance.

Tacoma-Puyallup Public Safety Radio System

The Tacoma-Puyallup Public Safety Radio System is a Motorola SmartZone 800 MHz trunked radio system. It covers approximately 60% of the geography of Pierce County serving public safety and general government agencies throughout Pierce County metropolitan areas. The system supports approximately 3,600 mobile and portable radios and 61 dispatch consoles.

The Tacoma-Puyallup radio system was constructed in two parts. City of Tacoma completed construction of its portion of the system in 2004. The cities of Tacoma and Puyallup later formed a partnership, formalized by an Interlocal agreement in 2007, to develop a regional communications network serving the metropolitan areas of Pierce County as a single system linked at the Tacoma switch.

Governance of this radio system is covered under terms of the Interlocal agreement between the two parties. Each party is responsible for the costs of building, operating, and maintaining its own portion of the system and shares the cost of the common switch.

Each party funded the majority of its own initial capital costs. Expansion projects were funded in part by approximately $5M of grants including a COPS grant in 2005, a State grant in 2007, and a PSIC grant in 2009.

Pierce County Government Radio System

The Pierce County Government Radio System supports approximately 2,200 mobile and portable radios used by the Pierce County Sheriff and other agencies in the county.

The Pierce County Government Radio System is a "wide-band" VHF conventional system and is subject to the Narrowbanding mandate. In addition to Narrowbanding its existing VHF radio system, Pierce County plans to migrate users over to Pierce Transit's 700 MHz radio system.

Pierce County FireCom Radio System

The Pierce County FireCom Radio System is a VHF conventional radio system used by most fire and emergency medical service (EMS) agencies throughout the county. (Tacoma Fire and Central Pierce Fire and Rescue use the Tacoma-Puyallup radio system and are the notable exception to this.) The FireCom dispatch system is connected to the Tacoma-Puyallup radio system to allow FireCom system users to communicate with other agencies.

Pierce Transit Radio System.

Pierce Transit is the public transit authority for Pierce County and is governed by a board composed of elected officials from throughout the county. Pierce Transit owns and operates a six site, 700 MHz, Motorola P25 Phase 1 trunked radio system to support its transit operations. Pierce County radio technicians currently support the Pierce Transit radio system. Pierce County and Pierce Transit are working with Motorola to upgrade the transit radio system to support P25 Phase 2 and expand it to meet the needs of agencies now served by the Pierce County Government VHF system.

Washington State Patrol (WSP) Radio System

The WSP Radio System is designed to cover state routes and Interstate Highways throughout Washington. The WSP system consists of radio base stations and repeaters on dedicated "area" frequencies aligned with WSP autonomous patrol areas. The system also hosts WSP's "State Common" frequency and interoperability channels supporting the Law Enforcement Radio Network (LERN), the National Law Enforcement Channel (NLEC), and the On Scene Command and Coordination Radio (OSCCR) system.

The current radio system is a "wide-band" VHF conventional system and is subject to the FCC Narrowbanding mandate.

WSP operates and maintains a fleet of approximately 1,200 mobile and portable radios statewide. Dispatching operations are done through eight regional communications centers located in WSP district headquarters facilities.

The WSP Electronic Services Division manages the radio system and funds ongoing operation and maintenance. Equipment replacement is funded through one-time allocations, typically grants or Legislative budget packages.

## A.2 Wireless Data

a. Existing Wireless Data Services

   There are approximately 10,000 commercial wireless data cards in use by public safety and general government throughout the Region. In addition, some public safety agencies in Snohomish County use a shared, private data system in addition to its separate LMR system. The data system currently provides service at a rate of 9.6 kbps.

b. Local efforts to deploy a LTE network

   City of Seattle is one of 21 jurisdictions nationwide that received conditional waivers from the FCC authorizing use of 700 MHz Public Safety Broadband (PSBB) spectrum[4]. That waiver, received in May 2010, authorizes operation within the geographic area of the city. In August 2010, multiple jurisdictions and agencies from the Region jointly submitted a Request for Waiver to authorize use of the 700 MHz PSBB spectrum throughout the Region. The FCC has not yet acted upon the August 2010 request.

   In July 2010, Seattle applied for grant funding, through the National Technology and Information Administration (NTIA) Broadband Technology Opportunities Program (BTOP), to construct a 700 MHz wireless broadband data network within the city. Seattle was not successful in its attempt to secure BTOP funds and is now investigating other funding alternatives.

   In December 2010, City of Seattle hired a consultant to evaluate its proposed LTE network design. This evaluation confirmed earlier vendor estimates that the city could achieve FCC coverage and throughput requirements for the 700 MHz broadband wireless network with 34 LTE sites located throughout the 84 square mile land geography of the City. As part of this process, the City identified specific radio sites and public buildings suitable for use as LTE sites and that have existing fiber cable (or that could readily be connected to existing fiber routes) for backhaul.

[4] See *Requests for Waiver of Various Petitioners to Allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks, PS Docket 06-229, Order, 25 FCC Rcd 5145 (2010) (Waiver Order).*

# Appendix B: Desired Future State

## B.1 Voice and Data Requirements

a. Coverage. The System(s) must meet established coverage goals. Coverage needs to include at least 97% of the population in each jurisdiction within the Region. This means that the coverage in each city and county meets this target. The Region has maps showing required coverage and that are available upon request.

b. Spectrum. There must be sufficient spectrum currently available, through a combination of the vendor's and REPC members' spectrum, to enable the System(s) to operate at an acceptable level both after the upgrade or replacement and during any transition period. Note that a significant portion of the Region is located north of Line A. Reliability. System(s) must work with at least 99.999% reliably throughout the Region. At a minimum, central system control equipment must be implemented in a redundant manner, and preferably in geographically-diverse locations. Sites must be connected by backhaul facilities that are implemented in self-healing ring(s) and/or mesh architecture.

c. Priority of services. The System(s) must be capable of providing at least seven (7) levels of priority so that System resources can be allocated based on the user and the application during periods of System congestion.

d. Implementation and Transition. This requirement relates to the process for moving from the current "as-is" state to the future "to-be" state within three general frameworks:

- Communications capabilities: Throughout the entire implementation and transition time period, end users must maintain the ability to communicate on normal operational talk groups and designated interoperability talk groups. However, it will be acceptable to limit some other existing features and functionality during transition.

- Transition duration and certainty: It is desirable to limit the time an agency must spend using multiple voice radio systems because this can cause confusion for system users. Thus, the time required to complete the transition of radio systems and individual end-user agencies needs to be limited and predictable to minimize impact on system owner/operators and end-user agencies.

- Timing flexibility: It is desirable to allow flexible timing in implementation so that system owner/operators and end-user agencies can realize the planned life expectancy for existing system infrastructure and end-user devices, and so that system owner/operators can plan their own migration

timeframes versus having to comply with a schedule determined by others.

e. Scalability. The System(s) must be able to accommodate growth of radio sites, channels, dispatch consoles, and end-user devices over a planning horizon extending to 2030.

f. Local Service Delivery and Control. It is highly desirable that the System(s) allow ownership and maintenance functions to be segmented so owners can manage the service delivery process with their end user customers.

g. Encryption Key Management. System-level encryption key management capabilities must be available. Even if there are region-level key management capabilities, local jurisdictions must still be able to manage their own keys. The System(s) must support at least 128 bit encryption.

h. Over-the-Air-Programming (OTAP) and End-User Template Management. The System(s) must support OTAP capability and the ability to manage end-user templates centrally.

i. GPS-Enabled End User Devices. Each user device must be GPS-enabled, and the System must make GPS data available to other System users.

**B.2 Voice Only Requirements**

a. The System(s) must be able to provide the services listed in National Public Safety Telecommunications Council's Broadband Working Group Report on Broadband Requirements for Mission Critical Voice Communications Requirements for Public Safety available at: http://npstc.org/

b. Mobility and Interoperability. System users must be able to use a number of talk groups (both unencrypted and encrypted) throughout the Region without having to make any changes to their radios or talk group selections.

**B.3 Data Only Requirements**

a. The System must meet all requirements specified in the Federal Communications Commission (FCC) waiver order authorizing use of the 700 MHz public safety broadband spectrum.[5]

b. The System must conform to the national architecture for the wireless public safety broadband data network. Currently, it appears that the Public Safety community and the industry are supporting an architecture based upon a single PLMN-ID for public safety nationwide.

[5] See *Requests for Waiver of Various Petitioners to Allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks, PS Docket 06-229, Order, 25 FCC Rcd 5145 (2010) (Waiver Order).*

c. The System must be capable of serving a minimum of 40,000 subscriber devices.

d. The System must provide quality of service.

e. A monitoring and management system.

f. Spectral efficiency of at least 7 bps/Hz (peak rate) per sector.

g. Integrate with E911 and future NG911 systems.

### B.4 National Institute of Standards and Technology's Visiting Committee on Advanced Technology

The Visiting Committee on Advanced Technology (VCAT) of the National Institute of Standards and Technology (NIST) recently published a draft of a report entitled "Desirable Properties of a National Public Safety Network" (http://www.nist.gov/director/vcat/upload/vcat-public-safety-subcommitte.pdf). Respondents to this RFI are encouraged to review that draft report to help inform their responses and to facilitate alignment between these complementary efforts.

## Appendix C: Financial forms

Please complete the spreadsheet that is embedded below.

PPP RFI Financial Information Form.xls›

## Appendix D: List of potential, government-owned sites

Vendors interested in responding to the RFI may request a list of potential, government-owned radio sites that could be used to construct the System.

## Appendix E: List of available spectrum

Vendors interested in responding to the RFI may request a list of currently used frequencies that could be used to construct the System.